

Fire Protection

OSHA Part 1910 Subpart L

Fire Protection Objectives

- Familiarization with Subpart L
- Define key terms
- Discuss fire brigades
- Discuss use of fire extinguishers
- Discuss other fire extinguishing systems
- Discuss where to get additional information

Standards

- 1910.155 - Scope, application and definitions
- 1910.156 - Fire Brigades
- 1910.157 - Portable Fire Extinguishers
- 1910.158 - Standpipe and Hose Systems
- 1910.159 - Automatic Sprinkler Systems
- 1910.160 - Fixed Extinguishing Systems, general

Standards

- 1910.161 - Fixed Extinguishing Systems,
Dry Chemical
- 1910.162 - Fixed Extinguishing Systems,
Gaseous Agent
- 1910.163 - Fixed Extinguishing Systems,
Water Spray and Foam
- 1910.164 - Fire Detection Systems
- 1910.165 - Employee Alarm Systems

Standards

- 1910 Subpart L - Authority for 1910 Subpart L
- 1910 Subpart L - Appendix A
– Fire Protection
- 1910 Subpart L - Appendix B
– National Consensus Standards

Standards

- 1910 Subpart L - Appendix C
 - Fire Protection References and Other Information
- 1910 Subpart L - Appendix D
- 1910 Subpart L - Appendix E
 - Test Methods for Protective Clothing

Fire Tetrahedron

- Basic components of a fire are:
 - fuel
 - source of ignition
 - oxygen
 - process of combustion
- Commonly referred to as the "fire tetrahedron"



1910.155

Scope, application and definitions

- Scope
- This subpart contains requirements for fire brigades, and all portable and fixed fire suppression equipment, fire detection systems, and fire or employee alarm systems installed to meet the fire protection requirements of 29 CFR Part 1910.

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Scope, application and definitions

- Application.
- This subpart applies to all employments except for maritime, construction, and agriculture.
- Definitions applicable to this subpart.

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Scope, application and definitions

- "Approved"
 - means acceptable to the Assistant Secretary under the following criteria:
 - If it is accepted, or certified, or listed, or labeled or otherwise determined to be safe by a nationally recognized testing laboratory

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Scope, application and definitions

- "Class A fire" means a fire involving ordinary combustible materials such as paper, wood, cloth, and some rubber and plastic materials.

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Scope, application and definitions

- "Class B fire" means a fire involving flammable or combustible liquids, flammable gases, greases and similar materials, and some rubber and plastic materials.

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Scope, application and definitions

- "Class C fire" means a fire involving energized electrical equipment where safety to the employee requires the use of electrically nonconductive extinguishing media.

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Scope, application and definitions

- "Class D fire" means a fire involving combustible metals such as magnesium, titanium, zirconium, sodium, lithium and potassium.

Fire/Life Safety

Fire Protection

- Class A Fires: Ordinary combustibles such as wood and paper.
- Class B Fires: Flammable and combustible liquids and gases.
- Class C Fires: Energized electrical equipment.
- Class D Fires: Combustible metals.
- Class K Fires: Cooking Oils and Fats.

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Scope, application and definitions

- "Extinguisher classification" means the letter classification given an extinguisher to designate the class or classes of fire on which an extinguisher will be effective.

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Scope, application and definitions

- "Extinguisher rating" means the numerical rating given to an extinguisher which indicates the extinguishing potential of the unit based on standardized tests developed by Underwriters' Laboratories, Inc.

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Scope, application and definitions

- "Fire brigade" (private fire department, industrial fire department) means an organized group of employees who are knowledgeable, trained, and skilled in at least basic fire fighting operations.

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Scope, application and definitions

- "Fixed extinguishing system" means a permanently installed system that either extinguishes or controls a fire at the location of the system.

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Scope, application and definitions

- "Incipient stage fire" means a fire which is in the initial or beginning stage and which can be controlled or extinguished by portable fire extinguishers, Class II standpipe or small hose systems without the need for protective clothing or breathing apparatus.

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Scope, application and definitions

- "Interior structural fire fighting" means the physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage.

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Scope, application and definitions

- "Multipurpose dry chemical" means a dry chemical which is approved for use on Class A, Class B and Class C fires.

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Scope, application and definitions

- "Positive-pressure breathing apparatus" means self-contained breathing apparatus in which the pressure in the breathing zone is positive in relation to the immediate environment during inhalation and exhalation.

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Scope, application and definitions

- "Sprinkler system" means a system of piping designed in accordance with fire protection engineering standards and installed to control or extinguish fires. The system includes an adequate and reliable water supply, and a network of specially sized piping and sprinklers which are interconnected. The system also includes a control valve and a device for actuating an alarm when the system is in operation.

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Fire Brigades

- This section contains requirements for:
 - Organization
 - Training
 - Personal Protective Equipment

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Fire Brigades

- Organization

- Employer shall prepare and maintain a written policy statement which:

- Establishes the fire brigade and its organizational structure
 - Defines the functions to be performed; and
 - States training program requirements.

- The employer must assure that employees who are expected to do interior structural firefighting are physically capable of performing duties

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Fire Brigades

- Training and Education
 - Shall be conducted prior to assignment
 - At least annually
 - Quarterly training or education sessions are required for fire brigades expected to perform interior structural fire fighting.

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Fire Brigades

- Fire Fighting Equipment
 - The employer shall maintain and inspect, at least annually, fire fighting equipment to assure safe operational condition of the equipment.
 - Portable fire extinguishers shall be inspected at least monthly
 - Respirators shall be inspected at least monthly

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Fire Brigades

- Protective Clothing
 - These requirements apply to those employees who perform interior structural fire fighting.
 - These requirements do not apply to employees who use fire extinguishers or standpipe systems to fire incipient level fires.

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Fire Brigades

- Protective Clothing
 - Foot and leg protection
 - Body protection
 - Hand Protection
 - Head, eye and face protection

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Fire Brigades

- Respiratory Protection Devices
 - The employer shall assure that respiratory protection devices worn by fire brigade members meet the requirements of 1910.134
 - A minimum rating of 30 minutes
 - Requires use of 2 in 2 out rule

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Portable Fire Extinguishers

- Requirements
 - Placement
 - Use
 - Maintenance
 - Testing

Portable Fire Extinguishers

If portable fire extinguishers are provided for employee use, the employer must mount, locate and identify them so workers can access them without subjecting themselves to possible injury.

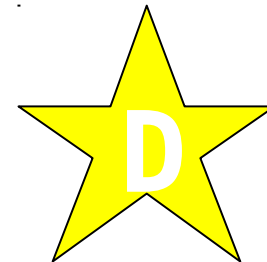
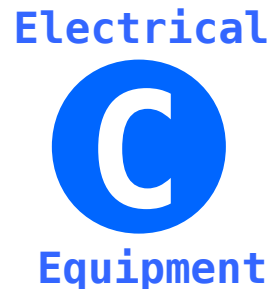


Blocked
extinguisher

Extinguisher Classification

Letter classification given an extinguisher to designate the class or classes of fire on which it will be effective

- **Class A** – ordinary combustibles (wood, cloth, paper)
- **Class B** – flammable liquids, gases, greases
- **Class C** – energized electrical equipment
- **Class D** – combustible metals



Extinguisher Rating

- Numerical rating given to Class A and B extinguishers which indicate how large a fire an experienced person can put out with the extinguisher
- Ratings are based on tests conducted at Underwriters' Laboratories, Inc.
 - Class A: 1-A, 2-A, . . . 40-A
 - Class B: 1-B, 2-B, . . . 640-B
- A 4-A extinguisher, for example, should extinguish about twice as much fire as a 2-A extinguisher

Maintaining Portable Fire Extinguishers

- Must maintain in a fully charged and operable condition
- Must keep in their designated places at all times except during use
- Must conduct an annual maintenance check
- Must record the annual maintenance date and retain this record for one year after the last entry or the life of the shell, whichever is less



Portable Fire Extinguisher Training and Education

- Where portable fire extinguishers have been provided for employee use in the workplace, employees must be provided with an educational program on the:
 - General principles of fire extinguisher use
 - Hazards of incipient (beginning) stage fire fighting
- Employees designated to use extinguishers must receive instruction and hands-on practice in the operation of equipment



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Portable Fire Extinguishers

– Training and Education

- Employees shall be educated in
 - Use of extinguishers
 - Associated Hazards
 - Initially and Annually
- Employees designated to use fire fighting equipment shall be trained

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Portable Fire Extinguishers

- General Requirements
 - Mount, locate and identify extinguishers so that they are readily accessible
 - Only approved extinguishers shall be used
 - Maintain extinguishers in a fully charged and operable condition

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Portable Fire Extinguishers

- Selection and Distribution
 - Based on Classes of anticipated workplace fires
 - On size and degree of hazard

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Portable Fire Extinguishers

- Extinguishers shall be distributed so that maximum travel distances apply:
- Class A 75 feet
- Class B 50 feet
- Class C Based on appropriate pattern
- Class D 75 feet

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Portable Fire Extinguishers

- Inspection, Maintenance and Testing
 - Extinguishers shall be:
 - Visually inspected monthly
 - Maintained annually
 - Hydrostatically tested periodically
- IAW Table L-1

Computer Monitor Fire

A computer monitor left on over a weekend caused this fire resulting in \$100,000 damage.



FAN FIRE

\$20000 Damage



What's wrong
with this sprinkler
head?



Training Resources

- United States Fire Administration (USFA)
- 1-800-561-3356
- www.usfa.fema.org
- Technical Reports
- Books
- CD-Roms

Training Resources

- National Fire Protection Association (NFPA)
- 1-800-344-3555
- www.nfpa.org

Useful Web Sites

- Consumer Products Safety Commission
— www.cpsc.org
- Firehouse Magazine
— www.firehouse.com

Summary

- This is only a small portion of Subpart L
- Research the standard for standpipe and fixed system requirements.
- What is a Class B fire?
- Does an interior fire brigade require quarterly training?
- A magnesium fire requires, what type fire extinguisher?